A

# PLANT

# PATHOLOGY

# 302

# LAB.

Robert A. Stevenson Jr.

# Red Stele of Strawberry

## *Phytophthora fragariae* (Hickman)

Signs and Symptoms:

Above ground:

Best observed early in the spring. Older leaves appear dwarfed or stunted and wilt and die. Young leaves are small with short petioles and have a vague bluish color.

Below ground:

Fine fibrous roots are destroyed leaving only the major root which may be cleared of the cortex layer by sloughing it off thus exposing the red center portion (stele) and positively identifying the disease.

Epiphytology:

Favored by cool wet weather and soil. This disease oversummers instead of overwintering, as oospores.

Etiology:

Persists as resting sexual spores during summer months. In fall or when conditions become right the oospores germinate producing sporangia which produce motile zoospores which infect the plants.

Dissemination:

1. Infected plants
2. Flood and drainage $H_2O$
3. Infested soil
4. Man

# RED STELE OF STRAWBERRY
## PHYTOPHTHORA FRAGARIAE (HICKMAN)

INFECTED PLANT
SHOWING ONLY LARGER ROOTS THAT ARE LEFT

CUT AWAY OF INFECTED ROOT SHOWING RED STELE

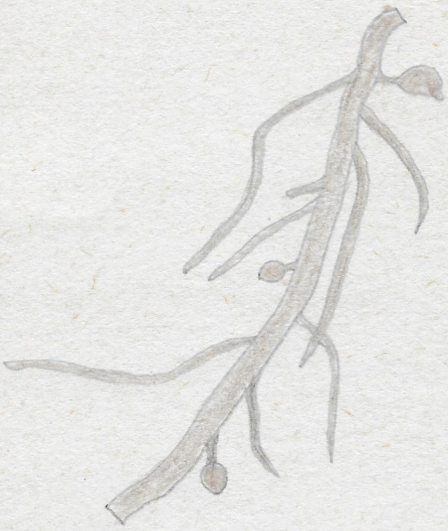
## CONTROL

1. RESISTANT VARIETIES
   - a. ABERDEEN
   - b. TEMPLE
   - c. SPARKLE
   - d. FAIRLAND
2. CLEAN PLANTS
3. 5 YEAR ROTATION

STRAWBERRY

ROOT KNOT NEMATODE

HETERODERA RADICICOLA



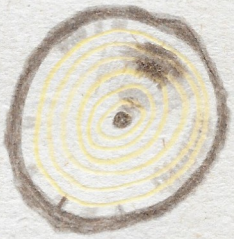
INFECTED SECTION OF ROOT
SHOWING CHARACTERISTIC KNOTS

# Testing of Toxicity of 2-4-D against *Monolinia fructicola*

| Being tested | Germination |
|---|---|
| Methyl ester (24D) | some germination |
| Farol ester (24D) | some germination |
| Amyl ester (24D) | not as good germination as above |
| Isopropyl ester (24D) | worst germination of any |
| Check | good germination |

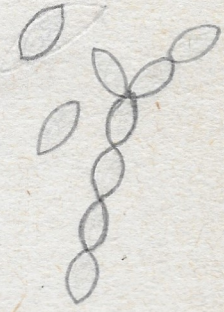
Cultures of Sclerotinia fructicola were put under bell jars with above chemicals, germination was measured (above) and results observed. Another test was made by making spore suspensions and putting 1 cc of a solution of orange juice (10 cc orange juice in 100 cc of water) for food. The check is being carried out in moist chambers for spore germination. Another test on growing colonies of Sclerotinia is being made on the colonies in agar.

# DUTCH ELM DISEASE
## GRAPHIUM ULMI



DISCOLORATION OF SPRING WOOD

LARVAL TUNNEL UNDER BARK



SPORES

BEETLE FEEDING PUNCTURE IN CROTCH OF TWIG

CANKER ON WOOD

# Peach Leaf Curl

## Taphrina deformans (Ger.) Tul

Signs and Symptoms:

Leaves: Young leaves are arched & reddened as they leave the bud. Later they become twisted curled, brittle, thickened. Eventually they are covered with a silvery bloom. These symptoms are visible only early in the season.

Twigs: Are swollen, brown, and a pale color.

Fruit: Young fruit are cracked, distorted, scabby and soon fall. Older leaves have swollen and irregular areas also a reddish discoloration and atrophy.

Predisposing factors: High humidity and a temperature of 50-68 °F are favorable to the fungus. Any other factors retarding spring foliation favor the fungus.

Control:

A spray of lignid lime sulfur 5/100 water when the buds are dormant

PEACH LEAF CURL
TAPHRINA DEFORMANS

UPPER LEAF SURFACE

INFECTED LEAF

# Tar Spot of Maple

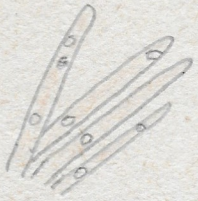
Signs and Symptoms:

Irregular, shining, black tar-like spots up to ½" in diameter on the upper side of the leaves.

Control:

1. Rake and burn leaves in the fall
2. Spray leaves with Bordeaux mixture

TAR SPOT OF MAPLE
RHYTISMA ACERINUM



CONIDIA

POTASSIUM DEFICIENCY ON MAPLE
(PHYSIOGENIC DISEASE)

RHODODENDRON
WINTER INJURY

UPPERSIDE OF LEAF

LEAF SPOT OF LAUREL
PHYLLOSTICTA LATIFOLIA

UPPERSIDE OF LEAF

RHODODENDRON LEAF BLOTCH
PESTALOTIA MACROTRICA

UPPER SIDE OF LEAF

ORANGE RUST OF BRAMBLES
GYMNOCONIA PECKIANA (HOWE)

UNDERSIDE OF LEAF

ANTHRACNOSE OF NORWAY MAPLE
GLEOSPORIUM APOCRYTUM

UPPER SIDE OF LEAF

UNDERSIDE OF LEAF

LEAF BLOTCH OF CHESTNUT

GUIDNARDIA AESCULI

UPPER LEAF SURFACE

ANTHRACNOSE OF SASSAFRAS (GENERIC NAME ?)

UPPER LEAF SURFACE

UNDERSIDE OF LEAF

PURPLE EYE SPOT OF MAPLE
PHYLLOSTICTA MINIMA

UPPER LEAF SURFACE

ADVANCED STAGE (SPOTS HAVE COALESCED)

INFECTED AREA

UPPER LEAF SUFACE